1:Williams E,G-5 (1923-1925) 1930
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and has no ceremonial significance. It is made by inflicting innumerable punctures with a thorn over a pattern made on the skin with charcoal.

Personal Hygiene

The Orokaiva is as dirty as and no dirtier than the next native. He hates the feel of cold water unless he is already hot and perspiring, and he would rather take a bath to get cool than to get clean. After his bathe he anoints his body and hair with the oily milk of the coco-nut, which he uses at all times with freedom. The somewhat rancid smell which one notices at times may be rather the effect of this oil than a genuine body odour.

The native uses a variety of perfumes which are not always alluring, and are sometimes even repulsive to the senses of a European. He wears sprigs of scented leaf in his armlet which he thinks will increase his sexual attraction. It is interesting to note that the delightful aroma of the lime tree (an introduction found in every village) has actually been declared unpleasant by some informants.

Face Painting

Faces are painted as a rule on gala occasions alone, but a young man who is intent on the self-display which constitutes the earlier stage of native love-making may on his own initiative wear a forehead ornament and decorate his cheeks. Nowadays he uses a trade mirror; formerly he poured water into a wooden bowl (*teva*) or one of those stone mortars which are still to be found in the Northern Division, and for which this use, viz. that of a mirror, is the only explanation a native can offer.

The paints used are a red seed (*obonda sari*), red ochre (*obonda opasi*), red clay (*niani*), grey or whitish clay (*onu*), charcoal (*oku*), and a leaf called *sopapa*. The last is crushed and mixed with lime and spittle, and forms a bright greenish yellow. I have discovered no trace of clan or tribal markings, the only approach toward distinctive patterns being found in the one or two devices employed by sects of the Taro cult.[1]

[1] 'The Taro Cult', in *Orokaiva Magic*, p. 67.

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241 energy they erect a scaffolding around it to enable them to
313 attack the trunk above the wide buttress-like flanges which are characteristic of so many Papuan trees. Of the smaller tree-trunks some are laid out to mark off one plot from another—for the gardens of the whole clan are likely to be grouped in the same large clearing—others are stacked in pyramids to dry for firewood. The litter of branches and
241 leaves is gathered into heaps and burnt. It would seem that the ideal is to have the ground as bare as possible before planting, and an exceptionally neat gardener will even go to the length of sweeping up the ashes from the burning. But the larger obstacles remain, and the garden will inevitably be obstructed with tree-trunks and those knotty roots which lie on the surface in the tropical bush.

There is no tilling of the soil and no manuring save indirectly through the burning of leaves and branches. There is no attempt at drainage or irrigation; indeed, both would be somewhat difficult on the plains, owing to their low gradient. In the sometimes protracted dry spells the taro offsets must be planted near swampy ground.

[412] The only implement used in actual gardening is the digging stick—usually a hardwood stake which may be improvised on the spot. Sometimes it takes the form of a well-finished crow-bar of black palm-wood with a spatulate point. In planting, the digging stick is driven into the ground and levered back and forth so as to increase the size of the hole. Then the gardener, not deigning to stoop, shoots his taro-top cleverly into its place, adjusts it, if necessary, by means of his nimble great toe, and lightly treads in the earth. Yams are propagated from shoots, being kept in the darkness of the yam-house until the shoots appear. The gardener knows how to plant from cuttings (sugar-cane and *ina*), from suckers (banana), and from seeds (tobacco and some minor garden products), and he transplants rooted seedlings of trees (bread-fruit and the *ajimo* or bark-cloth tree).

The garden is weeded from time to time by women, but when once the taro is well established, it is often left to contend with the weeds. A rough fence surrounds the whole

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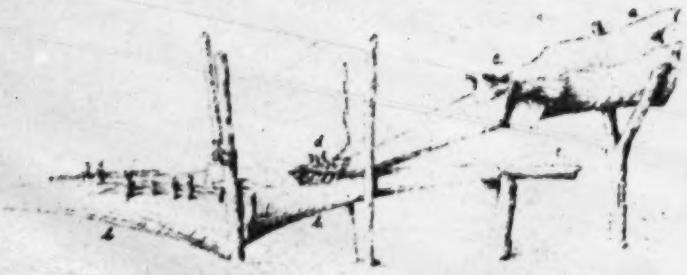

(*a*) *Beo* or Kneading Trough. (*b*) *Ingi Gau* or Settling Troughs. (*c*) *Usisi* or Strainer of Coco-nut Fibre. (*d*) *Kuoro* or Strainer of Coco-nut Leaves.

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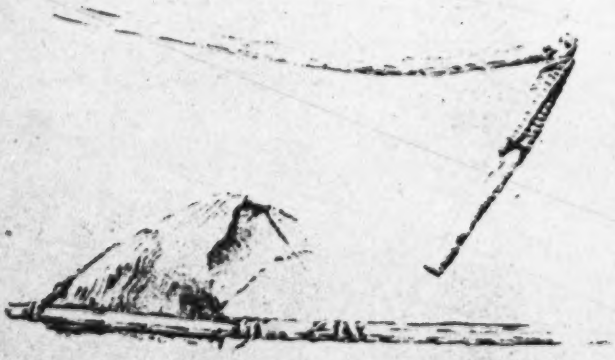

Above, Esai or Sago-scraper; *below, Gopiri* or Water-scoop

PLATE XII

[facing p. 58]

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dried up, the sago-maker's work, which requires a good supply of water, is not always easy.

The branches or fronds—often armed with the sharpest of thorns—being lopped from the selected tree, the leaves are spread on the swampy ground to make a temporary floor. The broad spathes are peeled off and the tree is felled. Next a section of bark is prised off and the sago-maker, taking his seat astride the trunk, proceeds to use his scraper (*evai*), which is hafted on to a forked branch so as to form a hammer-shaped implement. (The point of the hammer is slightly cupped and hardened in fire.) He accompanies his rhythmical strokes with strange ejaculations and musical cries, *eyeveyeyeyeye*, *o-dego-o-o-o-o o-deg-o-o-o-o*, and suchlike, of which he cannot give any explanation. The pith is transferred from time to time to the trough at which another man is working. The apparatus is shown on Plate XII (*a*).

The kneading trough (*a*) (*beo*) is made of a sago branch, so also are the settling troughs (*b*) (*ingi-gau*) placed end to end and carefully adjusted. The narrow ends of these may be raised or lowered, and any leaks are stopped with leaves. The sago pith is kneaded in (*a*) and constantly watered. The real sago is carried down in suspension by the water, and passing through the two strainers at (*c*) and (*d*) settles in the trough. The first strainer, made of coco-nut fibre, is called *usisi*; the second, merely a bunch of sago leaves, is called *kuoro*. If the trough is too shallow its edges are raised by sago leaflets fastened on as if with clothes-pegs. An ingenious water-scoop (*gopiri*) is made from a sheet of sago spathe. The harder surface is chopped away until only a thin leathery sheet remains. This is doubled and bound into the cleft of a sago midrib, and any leaks are patched with leaves. The supports or props for the troughs are often made of sections of the sago midrib, so that it is interesting to note how the whole apparatus, with the exception of the scraper (*evai*) and the coco-nut-fibre strainer (*usisi*) may be fashioned from the sago palm itself.

The sago soon settles in the settling trough, forming a pulpy mass. When the kneading is finished the water is run off and the mass of sago is pressed and pounded into

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252 lumps of the requisite size. These are rapidly singed in a fire of dry leaves and so acquire a brown glazed surface, a sort of tough skin which preserves the interior against moisture. The work is now finished. The glazed lump of sago is neatly bound with sago leaves, packed into the hollow of a sago branch, and carried home. Under favourable conditions two or three men will easily make 100 lb. in a day.

Collecting

222 The Orokaiva is a collector only by necessity or opportunity. When a prolonged drought in the South-East season causes a scarcity of food, collecting assumes importance, and a reduced diet must be eked out with roots, leaves, and fern fronds. While it is only under such stress that he collects systematically, he nevertheless keeps his eye open at all times for chance blessings when he is working or travelling. For tearing down betel pepper (*bingi*) or the [412] somewhat rare fruits of the bush he will tie a pair of poles together and bind on a small oblique peg at the end to make a hook. This crude improvisation called *kainpo* may have a reach of 30 feet. The native is, moreover, a nimble and daring climber. If, however, neither his *kainpo* nor his climbing are equal to the occasion, he will fell a large tree for the sake of a little honey or even a nest of edible insects.

[262] Frogs, snails, and fresh-water bivalves are collected by the humbler hands of women, but not in any quantity; they amount to nothing more than savouries.

Domesticated Animals

231 *The Pig.* The village pig and the wild pig are of the same species, the latter being continually domesticated. When a wild sucking-pig is captured by hunters, it is brought to the village and gradually tamed. Its roving and lawless nature may be restrained by the constant companionship of a long stick tied to its hind leg; it is fed and petted, its ears are snipped, it is castrated, and finally becomes as nearly domesticated as any other native pig. It is accustomed to forage about the village and to roam the neighbouring bush,

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where females are served by wild boars. It is fed every evening, and probably sleeps under the house.

Always a restless and obtrusive creature, the village pig is sometimes aggressive towards strangers, so that more than one visitor, even of magisterial importance, has been compelled to seek safety in the altitude of a house verandah. But, however unattractive, the pig is treated with consideration and even fondness by the villagers. Its owners, man and wife, are referred to as its father and mother. While young it may be washed with a magical infusion to promote its growth. It is given a personal name, and as it grows becomes an identity of importance in the village. As the inevitable hour of parting draws near, its 'mother' will be genuinely grief-stricken; and when at last her pig is bound for the sacrifice and lies groaning and struggling under the house, she will sit beside it, stroking it and shedding copious tears.

The pig is carried in the usual manner, with its feet bound to a pole. For a long journey a pig-litter (*kakate*) may be used. It is a cage-like structure of cane which, as it were, is made to measure and fits closely about the animal's body (see p. 79). The conventional method of slaughtering is with the spear, and at a feast of importance this is done ceremonially, a number of pigs being set in a row and stuck simultaneously. On such an occasion I have seen one of the butchers, more elderly than the rest, fail to impart sufficient force to his thrust, and try again, amid a good deal of laughter, until he drove the point home. Then he levered the shaft of his weapon back and forth like a crow-bar to make his work the surer. On the whole, however, there is no special inhumanity in the treatment of pigs.

The actual butchering is performed on a platform. Two long incisions are made from shoulder to tail, and the skin cut off together with a thick coating of fat. Then the body is dismembered with axe, trade knife, and bamboo knife (the last-named, *ivi*, is still used because of its extraordinary sharpness). The carving is not a pleasing spectacle. The blood drips through between the rails of the platform and is eagerly lapped up by quarrelling dogs below. There may

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smallish and in colouring resembles a brown leghorn with large sweeping tail-feathers; the hen is a neat little white or brown bird. The wings are well developed and the native fowl is often capable of flying to the top of a coco-nut palm. It is kept for eating or for its feathers; natives do not appear to fancy the eggs greatly. The cock is treasured principally on account of his long tail-feathers, which are shamelessly plucked; though natives realize that a European has queer notions regarding cruelty to dumb creatures, and more than once, inquiring about a tailless rooster, I have been assured that its feathers were torn out by a dog.

Preparation of Food

Fire-making. The indigenous method of fire-making is that of the stick and groove. From their mountain neighbours on the south the Orokaiva have learnt in recent times the saw method, with split stick and rattan. This is said to be more effective, but is not as yet very widely known.

The stick and groove method is called *kaja*, i.e. 'thrust', as, e.g., with a spear. The smaller stick is called *bi-kai* (*bi* = penis; *kai* is the root of *kaiari* or *kajari* = thrust). A shaving is peeled back on the piece of wood which acts as base. The *bi-kai* is grasped in both hands, knuckles up and thumbs down, and worked back and forth with increasing speed, till it is suddenly brought to a stop pressing into the end of the groove, where a little pile of smoking wood-dust has accumulated. If this is smouldering it is gently coaxed and blown and then transferred to a coco-nut husk. Although signed-on boys bring back matches to the villages, it is by no means to be imagined that the primitive method of fire-making has gone out of use.

Cooking. There is but one regular meal in the Orokaiva day, viz. in the evening. The housewife peels her taro and cuts it into lumps with a sharp oyster-shell or a keen-edged piece of coco-nut shell. She adds various leaves and herbs for flavouring, among the commonest being that of the taro itself, first carefully freed from its stalk and ribs. She may spray condiments out of her mouth into the pot, and finally covers it with leaves and allows it to seethe. From the

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earthenware pot (*obu*) the cooked taro is transferred to smaller pots, wooden bowls (*teva*), or coco-nut shells, in which it is served.

Food is placed in front of the principal people present, and the others soon group themselves round the various dishes. There is none but a tacit invitation, simply a jerk of the head. The meal goes on for the most part in silence—that is, in respect of conversation, though not always in respect of mastication and swallowing. The only table utensils are coco-nut spoons (*age*), in the form of little boat-shaped scoops, and three- or four-pronged forks (*sagi*) made of bone or wood. The latter, however, are said to be old men's implements. It was suggested that they were needed because of the clumsiness of an old man's fingers, but the fact is that there is something honorific about them. A young man would not feel at home with a *sagi*; he would be, in a manner, exceeding his rights.

Nearly all Orokaiva cooking is done in earthenware pots. They are even carried on expeditions. But on emergency there is the method of cooking with hot stones. The food is placed on a layer of leaves upon the hot stones; more leaves and more hot stones are laid on top, and the food slowly bakes. The method of cooking in a pit, with heated stones below and above is known, but I have never seen it put into practice. It is alluded to in some of the legends and is presumably an old fashion. The boiling of water by heated stones is used in fumigation. The medicines are placed together with water in a wooden dish (*teva*), and when the heated stones are thrown in, the steam rises and the sick man stoops over it to be fumigated.

Salt. The native shows the usual craving for salt, so that among the inlanders it is useful pay for carriers. Visiting the coast, these inlanders will even take calabashes and bring them home full of sea-water. The only means of obtaining it locally is by burning certain leaves and the husks of coco-nut or *Tauga* nuts. Over a layer of dry wood are set a number of large pottery fragments, and over these again are piled the leaves and husks. Ignited, the pile smokes abundantly, and when it has burnt away leaves a residue of

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Manufactures

463 Arts and crafts have reached no high development, nor, on the whole, do they make any pretensions to artistry. For the most part they are common knowledge and everyday [438] accomplishments. To a very limited extent do particular crafts belong to particular districts; for instance, the people of Huhurundi (Sauaha) are said to excel in the painting of bark-cloth—which is probably a matter of tradition; and the people of the middle Kumusi to excel in the making of stone clubs—which is merely a matter of a supply of pebbles. Again, in a limited degree we see signs of individual pre-eminence. A man may specialize in the making of *teva* or wooden bowls by virtue of a steady hand and a good eye, or a woman may have a reputation as a bark-cloth painter. But such individual skill is, I am convinced, the result of natural gifts rather than of any special training. It appears that any and every man tries his hand at carving a bowl out of a block of wood, and only those who find they have a special aptitude care to persist and perfect themselves. Investigation proves that such crafts are not necessarily or even usually hereditary.

In the main, therefore, it appears that every man is an all-round craftsman. If he is a jack-of-all-trades he is likewise a fair exponent of all of them; and if he is a master of one of them he is likely to be a master of all, simply because he is born with a certain adaptable skill or handiness.

462 The only labour division of any great interest is the habitual one between the sexes. Pottery, bark-cloth, pandanus mats, string, and small fish-nets are made by women; weapons, ornaments, wooden bowls, coco-nut mats and baskets, plaited belts, and the larger fish-nets are made by men.

Pottery (*Obu*). The yellowish clay used for pottery is not 323 found in all parts of the Division, and the collecting of it 317 may mean a long journey. It is brought home in a wrapping of moist leaves, and beaten out on a large flat board (*obu-* [442] *iri*), viz. the flange of a forest tree. The club is a piece of plain wood called *obu kungabu*.

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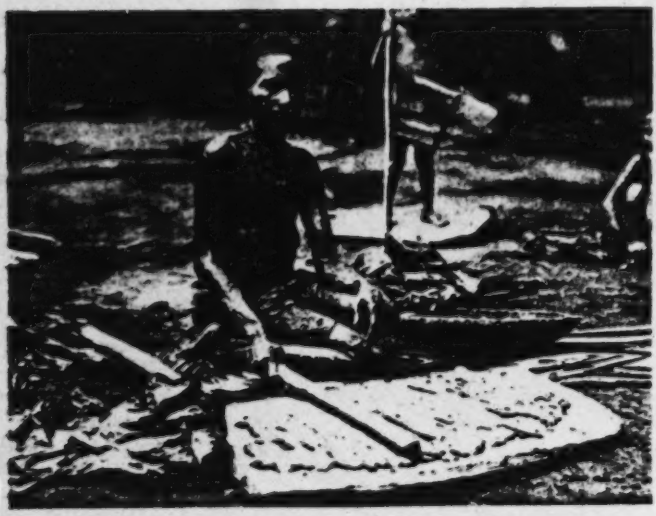

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(*a*) Beating Clay for Pottery

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(*b*) Making Wooden Dishes, *Tava*

PLATE XVII [Facing p. 78]

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pig inside, enclosed as if in a made-to-measure basket. It remains questionable whether the pig travels more comfortably thus than in the normal way with its feet tied to a pole.

Plaiting. Belts are made by men with very thin strips of cane. Several effective patterns are done in yellow and black of which I have recorded only the commonest one (*vide* Plate IX). Belts and armlets or leglets are made from a species of brown creeper fibre, plaited very closely into bands of varying width.

String and Rope. String such as is used in making small fish-nets is made by women. They tease out pandanus fibre and roll it on the thigh. Rope, e.g. for pig-nets, is made by men from pandanus.

Woodwork. Wooden bowls (*teva*) are cut out of blocks of soft wood. The work is done with a light adze and the surface is smoothed with sandpaper leaves. The finished article is a light boat-shaped vessel, with or without a handle at one end; though entirely without ornament, it sometimes possesses a graceful outline. These *teva* are often made by men who appear to be experts, and they make the nearest approach to the stock-in-trade of a specialist.

The carving of hard-wood into lime spatulae has been already mentioned (p. 66). With somewhat rare exceptions such carving is inferior or careless; and in many cases scratching would be a better word.

Weapons

Spears. The principal weapon is the spear, of which several varieties are distinguished.

(1) The ordinary pig-spear (*o-ki*) is made of black palmwood (*koropa*). It is heavy and long—often about 12 feet. The section towards the point is half oval, and there are two sets of barbs.

(2) The fighting spear (*overo*) is much lighter and only about 9 feet in length. It is made either of *koropa* palm or of a reddish hard-wood (*kimana*) which takes a high polish. The section toward the point is approximately square; there are four sets of barbs, often well cut; and some distance below

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411 (Plate XVIIIb). Of the attached strings one is in the form of a loop, which is passed round a finger; the other is released in throwing.

The Shield. The shield (*behs* or *pere*) is made of light wood, about ½ inch thick, strongly bound with narrow strips of cane to prevent splitting. The handle is a loop of stout rattan which passes through the wood. The shape of the shield—square cut above and pointed below—caused early observers to refer to it very appropriately as 'Gothic'. It [531] sometimes bears a device—in no manner heraldic but purely decorative—made by interlacing black strands among the yellow cane binding strips; and when this is well done the effect may be artistic and even dainty (Plate XIX).

The *behs* is held under-grip in the warrior's left hand, which also contrives to hold a club and even an extra spear. His right hand poises or brandishes the spear which he is about to throw, giving little jerks which cause it to vibrate like a twanged string. (At that moment it might well enough be called a 'shadowy spear'.)

Shields are used very adroitly in turning or intercepting missiles, and a broken spear-point buried in the wood is regarded as a trophy. Despite the fact that their serious use is over they are still very commonly kept in readiness—at least by the Aiga—and they always make a fracas possible. Like most other men the Orokaiva has no stomach for the plain spear, and he enjoys his inter-tribal brawl much more when he has a *behs* in his hand.

Miscellaneous Implements

● 412 The implements used in gardening, sago-making, fishing, &c., have already been described. It remains to mention a few used for general purposes.

The Adze or Axe. The adze or axe blade (*oto*) is a ground river pebble. This is bound with cane into a split tang, and the tang is driven into a groove in the forked branch which serves as a handle. Here it is held by a binding of plaited cane. The implement is either axe or adze according to the way the tang is turned.

The celt itself is made from a selected river pebble by

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pounding and rubbing. Very few nowadays remain in the villages, but those that I have seen vary considerably in size and form. So much depends on the original shape of the pebble selected and there is such an infinite variety of pebbles which a native can see are easily convertible into adze blades, that I think it would be unprofitable to attempt a classification.

Fig. 19. Hafting of Adze.

The stone adze is still used to some small extent in the hollowing of canoes, but for all other purposes the stone has yielded place to imported steel. The introduction of the steel axe and the trade knife has greatly simplified the work of gardening and building, though so far, I believe, it has not led to any great improvement in methods.

Cutting and Scraping Instruments. For small cutting instruments there are the bamboo knife (*ini*) which is given a razor-like sharpness by simply peeling off the edge; the cockle shell which is the Orokaiva pocket knife; and the

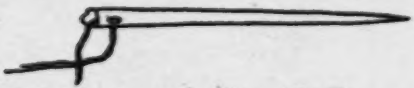

Fig. 20. *Jino* or Bone Needle.

bari, a disk of coco-nut or oyster shell with one section of its edge kept sharp, which is used for peeling taro. For scrapers the edge of a cockle shell and the thicker edge of a boar's tusk are used. There are three kinds of files: (1) a kind of pumice called *nidiri*; (2) the skin of a certain fish (*Seh*) which is dried and stretched over a slab of wood; and (3) the rough leaves of various trees.

Needles, &c. Bodkins (*poma*), which a woman wears thrust in her hair, are made of flying-fox bones. So also are needles (*jino*), the eye being made through one side of the hollow bone (Fig. 20).

Drills. Two kinds of drill are in use. The commoner is

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412 the well-known pump-drill (*arase*), known, I believe, in all parts of the Division. It possesses no unique feature unless it be that the fly-wheel is composed of several layers of pottery fragments bored through the centre.

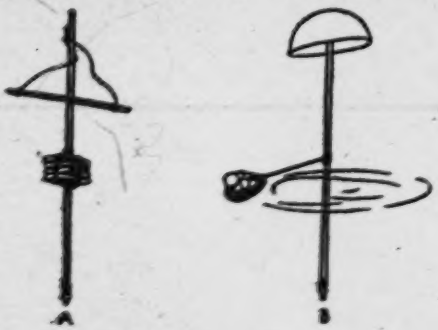

FIG. 21. Binandele Drills. A. *Arase*; B. *Jigogora*.

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FIG. 22. *Ise* or Drum.

A more primitive and far less effective mechanism (called *jigogora* or *paibosa*) is still in occasional use. This has no fixed fly-wheel but instead a stone attached by a string to the shaft and made to fly round and round it. The top of the shaft rotates in a cup-shaped receptacle (e.g. a coco-nut shell), while the bottom with its point of quartz bears on the object which is being drilled. A slight movement of the hand which grasps the coco-nut shell keeps the stone flying in a circle. The point is usually of quartz (*kase*) and sometimes, when procurable, of flint (*biru*).

Musical Instruments

534 *Drums.* The Orokaiva are fond of music and naturally musical, though they possess no instruments of much poten-

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241 311 true reason is so obvious to the native that he seldom thinks of explaining it. The Rotation of Areas is, in fact, a labour-saving device. With the implements at his dis-
● [412] posal—formerly his finger-nails, a stick, and a stone axe, nowadays his finger-nails, a stick, a tomahawk, and an 18-inch trade-knife—it is infinitely more difficult to overcome the dense mass of vigorous weeds and bushes which spring up in the wake of the taro, than to clear away the bush of ten years' standing, with its somewhat meagre trees and straggling underwood. It is the primary growth which the native gardener cannot cope with. What he does is to leave the matter to nature. After a few years the saplings have sprung up and overshadowed the weeds and shrubs, and in due course as the bush develops these latter are replaced by a much thinner and less formidable array of trailers and forest undergrowth. Even in bygone days, when a tree had to be brought down with a stone axe, this light bush was an easier problem than the primary growth; now that stone has been replaced by steel, it is easier beyond all comparison.

241 313 461 Sometimes the village will be almost deserted, while its population—men, women, and children—are together engaged in clearing. The work proceeds with a leisurely persistence, continual conversation, and occasional spells, when the woodman sits on a fallen tree and rattles his lime-stick and chews his betel. Now and again some
[533] cheerful worker will burst into song as he wields his axe, a mere bar or two of melody, sung at the top of his resonant Orokaiva voice. In beginning and ending it is strangely abrupt, more like a musical shout or a yodel than a song, and altogether a very good-humoured sound.

241 313 Tree felling is for the men; the cutting and dragging aside of undergrowth for the women and children. The heavier trees are suffered to lie where they fall, and will remain till long after the garden has been used and deserted. The lighter timber is stacked in high pyramids to dry for firewood, or else used, end for end, as borders for individual plots. Only the branches, leaves, and

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ing is hampered to any extent in these localities. Owing to natural drainage the flood-waters subside quietly and fairly rapidly, and, as I have said before, the flood as a rule does little harm and is not regarded very seriously by the natives.

It has been pointed out to me that one of the principal difficulties in the drainage of the plains is the tendency for smaller streams to pile up a mass of drift-wood, so as eventually to block their own progress. In the majority of cases this drift-wood seems to have been brought down by floods, but it may be that the case is rendered worse by the natives' habit of throwing felled timber into a convenient river instead of firing it. At any rate the effect is sometimes to cause local inundations, to deflect streams, and to create sour stagnant back-waters.

The native knows well enough the principle of draining, though he has no need to use it for horticulture. In the creek fishing of the inland peoples draining is constantly practised in order to make the water shallow enough for the use of 'New Guinea Dynamite' and scoop-nets. The water is commonly bailed out with sago-branch scoops, but one may also see long gutters (*andere*), elaborate undertakings when we consider that the implements for their construction are a spatulate stick and a knife.

The small engineering feats of the fisherman might be adapted to irrigation as well as drainage, though, I believe, the idea has never suggested itself to the Orokaiva. He knows how to build a rudimentary dam and how to construct a race, but the latter is a loop rejoining the stream and has never been turned into an irrigation channel. The drought, as was observed before, may sometimes be serious, and some simple kind of irrigation would be a blessing to the native at the height of the South-East season. The thought of carrying water is for obvious reasons abhorrent to him; he would rather go hungry. What he actually does is to plant out the *bere* or offsets of his taro in the damp swampy places and so

2: Williams E, G-5 (1923-1925) 1928
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flourishing taro with hardly a weed to be seen, and he points to this side and that, telling her that the gardens are his. Very well pleased with her prospects the girl goes out with her husband next morning to help him at his work. This time he takes her to his real garden, an overgrown neglected patch. Sadly disillusioned the poor girl says nothing but sits down to her weeding while her husband at a little distance does the same. Presently she pulls up a weed with a sound which causes her husband to think she has broken wind. He bursts into a loud guffaw, and the girl hangs her head in shame, thinking to herself, 'This new husband of mine is a brute as well as a liar.' After a moment's silence, while the man's back is turned, she takes a stone and flings it into the bush, crying excitedly, 'Look, a wallaby!' He notices the disturbance in the brushwood caused by the falling stone, seizes his spear and dashes off in pursuit, while the girl, taking advantage of his preoccupation, dashes off in the opposite direction to her village, where, to point the moral and make a happy ending, she subsequently marries another.

The native realizes that too great a proportion of the plant's vitality may go into its leaves, and sometimes he will trim them. Before planting the offset the young leaves are invariably snipped off except for one or two. So also with the taro-top. The cook holds a large flat piece of oyster shell or coco-nut shell in the palm of her hand, and with a pushing motion neatly severs the taro-top at its base before proceeding to peel the taro. The stalk is trimmed to a length of six or seven inches, and the taro-top put aside for replanting. The edge of this peeling instrument is dangerously sharp in clumsy hands. The cuscus was once an old woman who sat peeling taro while a dance was in progress. But she kept her old eye fixed in admiration upon her son-in-law, the barnyard rooster, who with his splendid feathers made such a figure among the dancers; and thus, while her attention strayed, the taro-peeler slipped, and she became aware

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000 economic complexity. We have noted the absence of any developed division of labour or co-operation among the Orokaiva; and not only economically, but socially as well, there is too much of an even tone or a dead level among them. Such a condition is not progressive. If we would wish to see a home-grown development of native civilization, it must lie in the direction of differentiation of labour and the evolution of social grades. These are somewhat beyond our immediate scope, but the intermediate or preparatory stage is, I believe, the more intensive culture of the soil by a firmly established rural settlement.

(*e*) *Practical Suggestions.* It is futile to dwell upon the hypothetical results of intensive culture and closer settlement without considering how these latter may be brought into being. There are several subjects of obvious importance, viz.:

1. Tools.
2. Rotation of crops.
3. Instruction.

I propose to deal with these rather shortly.

241 412 (1) *Tools.* The horticulture of Papua has not even reached the stage of *Hackbau.* It is incomparably inferior to that of Africa or the East, and principally, no doubt, for the reason that our natives have never used a hoe. 'Imperfect tools tend to perpetuate the lower stage.'[1] Our first business, if we would educate the native gardener, is to place an implement in his hand. At present [177] he is indebted to us for a knife and a steel axe. These have made the work of clearing easier, and have left him with more time on his hands. His gardening tool proper is still the digging-stick. It is true that certain tools are provided for native plantations, but it is understood that what this report endeavours to advocate is an improved village horticulture, irrespective of the native plantations,

[1] Ratzel, *History of Mankind*, vol. i, p. 91 (Macmillan). Quoted in Thomas, *Source Book for Social Origins*, p. 96.

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and such horticulture cannot improve on a mere digging-stick.

We all know, however, that it is not enough merely to present the native with a tool and the appropriate instructions. He must be taught to use it, not how to use it. But I shall return to that question after a few pages more. In the meantime there is one consideration that calls for notice. It is a mistake to expect any swift, revolutionary advance. One need not quarrel with the use of machinery on native plantations, where the main object is perhaps a large output, and where there is expert supervision always available. But—as it is perhaps unnecessary to note—such measures are in themselves of little educative value to the native gardener. Willis may be quoted at length on this subject:

'The mistake has been to try to make too large a step at once. The most modern machinery has been introduced directly. Of course the villager does not understand it properly, he cannot repair it if anything goes wrong, he cannot afford to buy it, and in many other ways it is unsuited to local conditions. The proper way of progress is the scientific one. The local tool should be carefully studied and compared with other tools of similar nature or used for similar purposes, and then when the principle of the whole subject is understood, the local tool should be modified slightly in the desired direction, so slightly that the villager need not have his prejudices offended, nor find anything that he cannot understand or repair in the new instrument.'[1]

A missionary in Africa tells how a merchant brought a number of English-made hoe-blades to Zululand. They were superior in every way to the native article, but of a different shape. 'The Kaffirs would not tolerate the innovation, and the improved hoes were unsaleable.' The disconsolate merchant then thought of ordering another consignment to be made strictly after the Zulu pattern. The results were all that he hoped for, and now the iron hoe-blade is almost always purchased from European traders.[2] Apart from the deplorable fact that a native industry was pressed out by cheap 'wholesale',

[1] J. C. Willis, *op. cit.*, p. 169.
[2] Rev. J. Shooter, *The Kafirs of Natal* (p. 17).